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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,704	09/30/2003	Jay B. Chase	IL-11035	8130

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Michael C. Staggs
Lawrence Livermore National Laboratory
L-703
P.O. Box 808
Livermore, CA 94551

EXAMINER	
RADI, JOHN A	

ART UNIT	PAPER NUMBER
3641	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,704	CHASE ET AL.	
	Examiner	Art Unit	
	John A. Radi	3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/7/06*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-9,11-15 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 4-9, 11-15, 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed February 7, 2006 have been fully considered but they are not persuasive.

With regard to amendment and arguments drawn to activation energy of less than 50mj of energy, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

To restate the original rejection, with respect to activation energy, Brooks doesn't explicitly teach an activation energy of less than 50mj of energy. As a motivation for combining Brooks and Wu, Brooks in col 4 lines 54-63 states that it is beneficial to create a CDU requiring less energy for activation, "the lower firing energy allows smaller, more compact CDUs to be used that can be integrated with the shaped charges themselves at a reasonable cost." Furthermore, Wu is drawn to an optical trigger system delivering 20-50mj of energy to each trigger (col 7 line 33), and Wu teaches that for oil well perforation and similar operations, a photodetector can be integrated with existing detonation systems (such as the slapper or bridge type detonators taught by Brooks) to create an oil perforation system in which the detonations are nearly instantaneously activated. Therefore, it would have been obvious to one skilled in the art at the time of invention to combine the optical triggering

system of Wu with the oil perforation system of Brooks to create a more accurate and near instantaneous oil perforation system.

Claim Objections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 1 and 14, the addition of the word "type" to an otherwise definite expression extends the scope of the expression so as to render it indefinite. *Ex parte Copenhaver*, 109 USPQ 118. See MPEP § 2173.05(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4-9, 11-15, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brooks et al. (US 6386108), and further in view of Wu et al. (US 6227114).

Brooks discloses a plurality of capacitor discharge units, CDUs (fig. 2A, 21), wherein each of said units further comprises: a capacitor (fig. 3, 18), an electrical bridge type detonator (22), associated circuitry to charge said units (fig. 3), and a trigger mechanism (62) to simultaneously (62) initiate each said detonator ("to within 100 ns," col. 8, line 44). In an alternate embodiment, Brooks also discloses a chip slapper (col. 3, line 42, and col. 5, line 17) operatively coupled to a shaped charge (figure 2A and 4A). Brooks also teaches a bridge type detonator wherein the bridge is aluminum (col. 6, line 54 and fig. 4A).

Brooks does not disclose an optical receiver in said discharge unit, or corresponding optical fibers to provide an optical trigger to said optical receiver. Furthermore, Brooks does not explicitly disclose an electrical bridge capable of initiating with less than 50 mj of energy, or an initiating switch selected from the group of: a Power Fet, a solid dielectric breakdown switch, a MOS-Controlled Thyristor or an Insulated Gate Bipolar Transistor.

With respect to the initiation of the electrical bridge limitation, Brooks doesn't explicitly teach an initiation less than 50 mj of energy, or an optical trigger system and associated mechanics. Wu teaches an optical detonation system which uses 20-50mj of energy (col 7 line 38 – because Wu discuses how as little as 20-50mj of laser energy can be used to trigger an activation sequence, the reader is led to believe that the output of Wu's optical trigger is in the order of 20-50mj). With regard to the optical trigger mechanism, Wu et al. teaches a plurality of CDUs (20, 22, 24), wherein each of said CDUs further comprises an optical receivers (260, 262, 264) which is operatively

connected to a triggering unit by one or more optical fibers adapted to provide an optical trigger signal, wherein said signal is used to simultaneously initiate a series of detonators located within each CDU.

Furthermore, the motivation to combine Brooks and Wu can be found in Brooks which teaches that it is beneficial to decrease the activation energy of the CDU thereby making it less expensive and allowing it to be incorporated with the shaped charge (col 4 lines 54-63).

With regard to the selection of the initiating switch in claims 6, 13, and 19, columns 7-11 of Brooks are devoted to the disclosure of 11 different types of switching mechanisms all of which can be said to be obvious variants of the Power Fet, MOS-Controlled switching circuits claimed by the applicant. In fact, the use of IGBTs, MOSFETs, and similar type switching mechanisms are well-known in the art of detonators and blasting mechanisms (see Liu, US 6470803, paragraph 14). Therefore, it would be *prima facie* obvious to use an initiating switch selected from the Markush Group as claimed in claims 6, 13, and 19.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Radi whose telephone number is 571-272-5883. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John A. Radi
Patent Examiner
Art Unit 3641

J. Woodhar Elghod

for Michael J. Carone
Supervisory Patent Examiner
Art Unit 3641